



SEQUENCE LISTING

<110> Ono Pharmaceutical Co., Ltd.

<120> A NOVEL POLYPEPTIDE, A CDNA ENCODING THE POLYPEPTIDE AND UTILIZATION
THEREOF

<130> Q61536

<140> 09/674,330
<141> 2000-10-30

<150> JP 10-119731
<151> 1998-04-28

<150> PCT/JP99/02283
<151> 1999-04-28

<160> 12

<170> PatentIn version 3.0

<210> 1

<211> 1344

<212> DNA

<213> Mus musculus

<400> 1

atgccaggat taaaaaggat actcaactgtt accatcttgg cactctggct tccacatcct 60
ggaaatgcac agcagcagtg cacaaacggc tttgacctgg accggcagtc aggacagtgt 120
ctagatattg atgaatgcgg gaccatccct gaggcttgcgt gtggggacat gatgtgtgtc 180
aaccagaatg gcgggttattt gtgcattccct cgaaccaacc cagtgtatcg agggcattac 240
tcaaattccct actctacatc ctactcaggc ccataccag cagcggccccc accagtagca 300
gcttccaact accccacat ttcaaggcct cttgtctgcc gctttggta tcagatggat 360
gaaggcaacc agtgtgtgga tgtggacgag tgtgcaacag actcacacca gtgcaaccct 420
acccagatct gatatcaacac tgaaggaggt tacacctgct cctgcaccga tgggtactgg 480
cttcttggaaag ggcagtgcct agatattgtt gaatgtcgct atggtaactg ccagcagctc 540
tgtgcaaatg ttccaggatc ctattccctgt acatgcaacc ctgggttacac cctcaacgac 600
gatggaaaggcttgcacaaga tgtgaacgag tgcaaaactg agaattccctg tggtcagacc 660
tgtgtcaaca cctatggctc tttcatctgc cgctgtgacc caggatatga acttgaggaa 720
gatggcattc actgcagtga tatggacgag tgcaagttctt ccgagttctt ctgtcaacac 780
gagtgtgtga accagccggg ctcatacttc tgctcgtgcc ctccaggctc cgtcctgttg 840

gatgataacc gaagctgcc a gatatcaat gaatgtgagc accgaaacca cacgtgtacc 900
tcactgcaga cttgctacaa tctacaaggg ggcttcaa at gtattgatcc catcagctgt 960
gaggagcctt atctgctgat tggtaaaac cgctgtatgt gtcctgctga gcacaccaggc 1020
tgcagagacc agccattcac catcctgtat cgggacatgg atgtgggtgc aggacgctcc 1080
gttcctgctg acatcttcca gatgcaagca acaacccgat accctgggtgc ctattacatt 1140
ttccagatca aatctggcaa cgagggtcga gagttctata tgccgcaaac agggcctatac 1200
agtgccaccc tggtgatgac acgccccatc aaagggcctc gggacatcca gctggacttg 1260
gagatgatca ctgtcaacac tgtcatcaac ttcagaggca gtcctgtat ccgactgcgg 1320
atatatgtgt cgca gatcatcc gttc 1344

<210> 2
<211> 2233
<212> DNA
<213> *Mus musculus*

<220>

<221> misc_feature

<223> Clone mouse A55 derived from Day 13 mouse embryonic heart

<220>

<221> misc_feature

<223> "n" may be either a, c, g or t

<220>

<221> CDS

<222> (75) .. (1418)

<220>

<221> sig_peptide

<222> (75) .. (143)

<220>

<221> mat_peptide

<222> (144) .. ()

<400> 2

aattcggcac gagccccagt cccacccgag agcctgcctt cctcgctcg cttctcctcc 60
cgcgcatctt ggat atg cca gga tta aaa agg ata ctc act gtt acc atc 110
Met Pro Gly Leu Lys Arg Ile Leu Thr Val Thr Ile
-20 -15

ttg gca ctc tgg ctt cca cat cct ggg aat gca cag cag cag tgc aca 158

Leu Ala Leu Trp Leu Pro His Pro Gly Asn Ala Gln Gln Gln Cys Thr			
-10	-5	-1 1	5
aac ggc ttt gac ctg gac cgc cag tca gga cag tgt cta gat att gat			
Asn Gly Phe Asp Leu Asp Arg Gln Ser Gly Gln Cys Leu Asp Ile Asp			
10	15	20	
gaa tgc cgg acc atc cct gag gct tgt cgt ggg gac atg atg tgt gtc			
Glu Cys Arg Thr Ile Pro Glu Ala Cys Arg Gly Asp Met Met Cys Val			
25	30	35	
aac cag aat ggc ggg tat ttg tgc atc cct cga acc aac cca gtg tat			
Asn Gln Asn Gly Gly Tyr Leu Cys Ile Pro Arg Thr Asn Pro Val Tyr			
40	45	50	
cga ggg cct tac tca aat ccc tac tct aca tcc tac tca ggc cca tac			
Arg Gly Pro Tyr Ser Asn Pro Tyr Ser Thr Ser Tyr Ser Gly Pro Tyr			
55	60	65	
cca gca gcg gcc cca cca gta cca gct tcc aac tac ccc acg att tca			
Pro Ala Ala Ala Pro Pro Val Pro Ala Ser Asn Tyr Pro Thr Ile Ser			
70	75	80	85
agg cct ctt gtc tgc cgc ttt ggg tat cag atg gat gaa ggc aac cag			
Arg Pro Leu Val Cys Arg Phe Gly Tyr Gln Met Asp Glu Gly Asn Gln			
90	95	100	
tgt gtg gat gtg gac gag tgt gca aca gac tca cac cag tgc aac cct			
Cys Val Asp Val Asp Glu Cys Ala Thr Asp Ser His Gln Cys Asn Pro			
105	110	115	
acc cag atc tgt atc aac act gaa gga ggt tac acc tgc tcc tgc acc			
Thr Gln Ile Cys Ile Asn Thr Glu Gly Gly Tyr Thr Cys Ser Cys Thr			
120	125	130	
gat ggg tac tgg ctt ctg gaa ggg cag tgc cta gat att gat gaa tgt			
Asp Gly Tyr Trp Leu Leu Glu Gly Gln Cys Leu Asp Ile Asp Glu Cys			
135	140	145	
cgc tat ggt tac tgc cag cag ctc tgt gca aat gtt cca gga tcc tat			
Arg Tyr Gly Tyr Cys Gln Gln Leu Cys Ala Asn Val Pro Gly Ser Tyr			
150	155	160	165
tcc tgt aca tgc aac cct ggt ttc acc ctc aac gac gat gga agg tct			
Ser Cys Thr Cys Asn Pro Gly Phe Thr Leu Asn Asp Asp Gly Arg Ser			
170	175	180	
tgc caa gat gtg aac gag tgc gaa act gag aat ccc tgt gtt cag acc			
Cys Gln Asp Val Asn Glu Cys Glu Thr Glu Asn Pro Cys Val Gln Thr			
185	190	195	
tgt gtc aac acc tat ggc tct ttc atc tgc cgc tgt gac cca gga tat			
Cys Val Asn Thr Tyr Gly Ser Phe Ile Cys Arg Cys Asp Pro Gly Tyr			
200	205	210	

gaa ctt gag gaa gat ggc att cac tgc agt gat atg gac gag tgc agc		830	
Glu Leu Glu Glu Asp Gly Ile His Cys Ser Asp Met Asp Glu Cys Ser			
215	220	225	
ttc tcc gag ttc ctc tgt caa cac gag tgt gtg aac cag ccg ggc tca		878	
Phe Ser Glu Phe Leu Cys Gln His Glu Cys Val Asn Gln Pro Gly Ser			
230	235	240	245
tac ttc tgc tcg tgc cct cca ggc tac gtc ctg ttg gat gat aac cga		926	
Tyr Phe Cys Ser Cys Pro Pro Gly Tyr Val Leu Leu Asp Asp Asn Arg			
250	255	260	
agc tgc cag gat atc aat gaa tgt gag cac cga aac cac acg tgt acc		974	
Ser Cys Gln Asp Ile Asn Glu Cys Glu His Arg Asn His Thr Cys Thr			
265	270	275	
tca ctg cag act tgc tac aat cta caa ggg ggc ttc aaa tgt att gat		1022	
Ser Leu Gln Thr Cys Tyr Asn Leu Gln Gly Gly Phe Lys Cys Ile Asp			
280	285	290	
ccc atc agc tgt gag gag cct tat ctg ctg att ggt gaa aac cgc tgt		1070	
Pro Ile Ser Cys Glu Glu Pro Tyr Leu Leu Ile Gly Glu Asn Arg Cys			
295	300	305	
atg tgt cct gct gag cac acc agc tgc aga gac cag cca ttc acc atc		1118	
Met Cys Pro Ala Glu His Thr Ser Cys Arg Asp Gln Pro Phe Thr Ile			
310	315	320	325
ctg tat cgg gac atg gat gtg gtg tca gga cgc tcc gtt cct gct gac		1166	
Leu Tyr Arg Asp Met Asp Val Val Ser Gly Arg Ser Val Pro Ala Asp			
330	335	340	
atc ttc cag atg caa gca aca acc cga tac cct ggt gcc tat tac att		1214	
Ile Phe Gln Met Gln Ala Thr Thr Arg Tyr Pro Gly Ala Tyr Tyr Ile			
345	350	355	
ttc cag atc aaa tct ggc aac gag ggt cga gag ttc tat atg cgg caa		1262	
Phe Gln Ile Lys Ser Gly Asn Glu Gly Arg Glu Phe Tyr Met Arg Gln			
360	365	370	
aca ggg cct atc agt gcc acc ctg gtg atg aca cgc ccc atc aaa ggg		1310	
Thr Gly Pro Ile Ser Ala Thr Leu Val Met Thr Arg Pro Ile Lys Gly			
375	380	385	
cct cgg gac atc cag ctg gac ttg gag atg atc act gtc aac act gtc		1358	
Pro Arg Asp Ile Gln Leu Asp Leu Glu Met Ile Thr Val Asn Thr Val			
390	395	400	405
atc aac ttc aga ggc agc tcc gtg atc cga ctg cgg ata tat gtg tcg		1406	
Ile Asn Phe Arg Gly Ser Ser Val Ile Arg Leu Arg Ile Tyr Val Ser			
410	415	420	
cag tat ccg ttc tgagcctctg gctaaggcct ctgacactgc ctttcaccag		1458	
Gln Tyr Pro Phe			
425			

caccgaggga cgggaggaga aaggaaacca gcaagaatga gagcgagaca gacattgcac 1518
 ctttcctgct gaatatctcc tggggcatac agcttagcat cttgaccat atctgtacta 1578
 ttgcagatgg tcactctgaa ggacaccctg ccctcagttc ctatgtgca gttatccaaa 1638
 agtgttcatac tttagccccctg atatgaggtt gccagtgact cttcaaagcc ttccatttat 1698
 ttccatcggtt ttataaaaaaa gaaaatagat tagatttgct ggggtatgag tcctcgaagg 1758
 ttcaaaagac tgagtggcctt gctctcacct cttcctctcc ttcctccatc tcttgctgca 1818
 ttgctgcttt gcaaaagtcc tcatgggctc gtggaaatg ctggaaatag ctatggat 1878
 tcttgcatgt tctgagaagg ctatggaaac acaccacagc aggatcgaag gttttatag 1938
 agtctattt aaaatcacat ctggattttt cagcataaaa gaaatttttag ttgtctttaa 1998
 aattttgtatg agtgttaac cttttcttat tcatttttag gcttcttaaa gtggtagaat 2058
 tccttccaaa ggcctcagat acatgttatg ttcaagtcttt ccaacctcat cctttcctgc 2118
 atcttagccc agttttacg aagaccctt aatcatgctt tnttaagagt ttttacccaa 2178
 ctgcgttggaa agacagaggt atccagactg attaaataat tgaagaaaaaa aaaaa 2233

<210> 3
 <211> 448
 <212> PRT
 <213> Mus musculus

<220>
 <221> misc_feature
 <223> Clone mouse A55 derived from Day 13 mouse embryonic heart
 <400> 3

Met Pro Gly Leu Lys Arg Ile Leu Thr Val Thr Ile Leu Ala Leu Trp
 -20 -15 -10

Leu Pro His Pro Gly Asn Ala Gln Gln Gln Cys Thr Asn Gly Phe Asp
 -5 -1 1 5

Leu Asp Arg Gln Ser Gly Gln Cys Leu Asp Ile Asp Glu Cys Arg Thr
 10 15 20 25

Ile Pro Glu Ala Cys Arg Gly Asp Met Met Cys Val Asn Gln Asn Gly
 30 35 40

Gly Tyr Leu Cys Ile Pro Arg Thr Asn Pro Val Tyr Arg Gly Pro Tyr
45 50 55

Ser Asn Pro Tyr Ser Thr Ser Tyr Ser Gly Pro Tyr Pro Ala Ala Ala
60 65 70

Pro Pro Val Pro Ala Ser Asn Tyr Pro Thr Ile Ser Arg Pro Leu Val
75 80 85

Cys Arg Phe Gly Tyr Gln Met Asp Glu Gly Asn Gln Cys Val Asp Val
90 95 100 105

Asp Glu Cys Ala Thr Asp Ser His Gln Cys Asn Pro Thr Gln Ile Cys
110 115 120

Ile Asn Thr Glu Gly Gly Tyr Thr Cys Ser Cys Thr Asp Gly Tyr Trp
125 130 135

Leu Leu Glu Gly Gln Cys Leu Asp Ile Asp Glu Cys Arg Tyr Gly Tyr
140 145 150

Cys Gln Gln Leu Cys Ala Asn Val Pro Gly Ser Tyr Ser Cys Thr Cys
155 160 165

Asn Pro Gly Phe Thr Leu Asn Asp Asp Gly Arg Ser Cys Gln Asp Val
170 175 180 185

Asn Glu Cys Glu Thr Glu Asn Pro Cys Val Gln Thr Cys Val Asn Thr
190 195 200

Tyr Gly Ser Phe Ile Cys Arg Cys Asp Pro Gly Tyr Glu Leu Glu Glu
205 210 215

Asp Gly Ile His Cys Ser Asp Met Asp Glu Cys Ser Phe Ser Glu Phe
220 225 230

Leu Cys Gln His Glu Cys Val Asn Gln Pro Gly Ser Tyr Phe Cys Ser
235 240 245

Cys Pro Pro Gly Tyr Val Leu Leu Asp Asp Asn Arg Ser Cys Gln Asp
250 255 260 265

Ile Asn Glu Cys Glu His Arg Asn His Thr Cys Thr Ser Leu Gln Thr
270 275 280

Cys Tyr Asn Leu Gln Gly Gly Phe Lys Cys Ile Asp Pro Ile Ser Cys
285 290 295

Glu Glu Pro Tyr Leu Leu Ile Gly Glu Asn Arg Cys Met Cys Pro Ala
300 305 310

Glu His Thr Ser Cys Arg Asp Gln Pro Phe Thr Ile Leu Tyr Arg Asp
315 320 325

Met Asp Val Val Ser Gly Arg Ser Val Pro Ala Asp Ile Phe Gln Met
330 335 340 345

Gln Ala Thr Thr Arg Tyr Pro Gly Ala Tyr Tyr Ile Phe Gln Ile Lys
350 355 360

Ser Gly Asn Glu Gly Arg Glu Phe Tyr Met Arg Gln Thr Gly Pro Ile
365 370 375

Ser Ala Thr Leu Val Met Thr Arg Pro Ile Lys Gly Pro Arg Asp Ile
380 385 390

Gln Leu Asp Leu Glu Met Ile Thr Val Asn Thr Val Ile Asn Phe Arg
395 400 405

Gly Ser Ser Val Ile Arg Leu Arg Ile Tyr Val Ser Gln Tyr Pro Phe
410 415 420 425

<210> 4
<211> 423
<212> PRT
<213> Mus musculus

<400> 4

Gln Cys Thr Asn Gly Phe Asp Leu Asp Arg Gln Ser Gly Gln Cys Leu
1 5 10 15

Asp Ile Asp Glu Cys Arg Thr Ile Pro Glu Ala Cys Arg Gly Asp Met
20 25 30

Met Cys Val Asn Gln Asn Gly Gly Tyr Leu Cys Ile Pro Arg Thr Asn

35	40	45
Pro Val Tyr Arg Gly Pro Tyr Ser Asn Pro Tyr Ser Thr Ser Tyr Ser		
50	55	60
Gly Pro Tyr Pro Ala Ala Ala Pro Pro Val Pro Ala Ser Asn Tyr Pro		
65	70	75
Thr Ile Ser Arg Pro Leu Val Cys Arg Phe Gly Tyr Gln Met Asp Glu		
85	90	95
Gly Asn Gln Cys Val Asp Val Asp Glu Cys Ala Thr Asp Ser His Gln		
100	105	110
Cys Asn Pro Thr Gln Ile Cys Ile Asn Thr Glu Gly Gly Tyr Thr Cys		
115	120	125
Ser Cys Thr Asp Gly Tyr Trp Leu Leu Glu Gly Gln Cys Leu Asp Ile		
130	135	140
Asp Glu Cys Arg Tyr Gly Tyr Cys Gln Gln Leu Cys Ala Asn Val Pro		
145	150	155
Gly Ser Tyr Ser Cys Thr Cys Asn Pro Gly Phe Thr Leu Asn Asp Asp		
165	170	175
Gly Arg Ser Cys Gln Asp Val Asn Glu Cys Glu Thr Glu Asn Pro Cys		
180	185	190
Val Gln Thr Cys Val Asn Thr Tyr Gly Ser Phe Ile Cys Arg Cys Asp		
195	200	205
Pro Gly Tyr Glu Leu Glu Asp Gly Ile His Cys Ser Asp Met Asp		
210	215	220
Glu Cys Ser Phe Ser Glu Phe Leu Cys Gln His Glu Cys Val Asn Gln		
225	230	235
Pro Gly Ser Tyr Phe Cys Ser Cys Pro Pro Gly Tyr Val Leu Leu Asp		
245	250	255
Asp Asn Arg Ser Cys Gln Asp Ile Asn Glu Cys Glu His Arg Asn His		
260	265	270
Thr Cys Thr Ser Leu Gln Thr Cys Tyr Asn Leu Gln Gly Gly Phe Lys		
275	280	285
Cys Ile Asp Pro Ile Ser Cys Glu Glu Pro Tyr Leu Leu Ile Gly Glu		
290	295	300
Asn Arg Cys Met Cys Pro Ala Glu His Thr Ser Cys Arg Asp Gln Pro		
305	310	315
Phe Thr Ile Leu Tyr Arg Asp Met Asp Val Val Ser Gly Arg Ser Val		
325	330	335

Pro Ala Asp Ile Phe Gln Met Gln Ala Thr Thr Arg Tyr Pro Gly Ala
340 345 350

Tyr Tyr Ile Phe Gln Ile Lys Ser Gly Asn Glu Gly Arg Glu Phe Tyr
355 360 365

Met Arg Gln Thr Gly Pro Ile Ser Ala Thr Leu Val Met Thr Arg Pro
370 375 380

Ile Lys Gly Pro Arg Asp Ile Gln Leu Asp Leu Glu Met Ile Thr Val
385 390 395 400

Asn Thr Val Ile Asn Phe Arg Gly Ser Ser Val Ile Arg Leu Arg Ile
405 410 415

Tyr Val Ser Gln Tyr Pro Phe
420

<210> 5

<211> 1269

<212> DNA

<213> Mus musculus

<400> 5

cagtgcacaa acggcttga cctggaccgc cagtcaggac agtgtctaga tattgatgaa 60

tgcggacca tccctgaggc ttgtcggtgg gacatgatgt gtgtcaacca gaatggcggg 120

tatttgtca tccctcgaac caacccagtg tatcgaggc cttactcaaa tccctactct 180

acatcctact caggcccata cccagcagcg gccccaccag taccagcttc caactacccc 240

acgatttcaa ggcctttgt ctggcgctt ggttatcaga tggatgaagg caaccagtgt 300

gtggatgtgg acgagtgtgc aacagactca caccagtca accctaccca gatctgtatc 360

aacactgaag gaggttacac ctgctcctgc accgatgggt actggcttct ggaagggcag 420

tgcctagata ttgatgaatg tcgctatggt tactgccagc agctctgtgc aaatgttcca 480

ggatcctatt cctgtacatg caaccctggt ttcaccctca acgacgatgg aaggcttgc 540

caagatgtga acgagtgcga aactgagaat ccctgtgttc agacctgtgt caacacctat 600

ggctcttca tctgccgtg tgaccaggta tatgaacttg aggaagatgg cattcactgc 660

agtgatatgg acgagtgcag cttctccgag ttcctctgtc aacacgagtg tgtgaaccag 720

ccgggctcat acttctgctc gtgccctcca ggctacgtcc tggatgatgaaaccgaagc 780

tgccaggata tcaatgaatg tgagcaccga aaccacacgt gtacctcaact gcagacttgc 840

tacaatctac aagggggctt caaatgtatt gatcccatca gctgtgagga gccttatctg 900

ctgattggtg aaaaccgctg tatgtgtcct gctgagcaca ccagctgcag agaccagcca 960
ttcaccatcc tgtatcgga catggatgtg gtgtcaggac gctccgttcc tgctgacatc 1020
ttccagatgc aagcaacaac ccgataccct ggtgcctatt acatttcca gatcaaatct 1080
ggcaacgagg gtcgagagtt ctatatgcgg caaacagggc ctatcagtgc caccctggtg 1140
atgacacgccc ccatcaaagg gcctcgacatccctgg acttggagat gatcactgtc 1200
aacactgtca tcaacttcag aggcagctcc gtgatccgac tgccgatata tgtgtcgcag 1260
tatccgttc 1269

<210> 6
<211> 1383
<212> DNA
<213> Mus musculus

<400> 6
atgggaccta gaagttcga gccaatgcac agtggactct gcagacagag acgcatgata 60
ctcaactgtta ccatctggc actctggctt ccacatcctg ggaatgcaca gcagcagtgc 120
acaaacggct ttgacctgga ccgcgcgtca ggacagtgtc tagatattga tgaatgccgg 180
accatccctg aggcttgcg tggggacatg atgtgtgtca accagaatgg cgggtatttg 240
tgcatccctc gaaccaaccc agtgtatcga gggccttact caaatcccta ctctacatcc 300
tactcaggcc catacccagc agcggcccca ccagtaccag cttccaaacta ccccacgatt 360
tcaaggcctc ttgtctgccc cttgggtat cagatggatg aaggcaacca gtgtgtggat 420
gtggacgagt gtgcaacaga ctcacaccag tgcaacccta cccagatctg tatcaacact 480
gaaggagggtt acacctgctc ctgcaccatggacttgc ttctggagg gcagtcctta 540
gatattgtatg aatgtcgcta tggtaactgc cagcagctct gtgcaaatgt tccaggatcc 600
tattcctgtta catgcaaccc tggttcacc ctcaacgcacg atggaagggtc ttgccaagat 660
gtgaacgagt gcgaaactga gaatccctgt gttcagacatgt gtgtcaacac cttatggctct 720
ttcatctgcc gctgtgaccc aggatatgaa cttgaggaag atggcattca ctgcagtgtat 780
atggacgagt gcagcttctc cgagttcctc tgtcaacacg agtgtgtgaa ccagccggc 840
tcataacttct gctcgtgccc tccaggctac gtcctgttgg atgataaccg aagctgccag 900
gatataatg aatgtgagca ccgaaaccac acgtgtaccc cactgcagac ttgctacaat 960
ctacaagggg gcttcaaataatg tattgatccc atcagctgtg aggagcctta tctgctgatt 1020

ggtgaaaacc gctgtatgtg tcctgctgag cacaccagct gcagagacca gccattcacc 1080
atcctgtatc gggacatgga tgtggtgtca ggacgctccg ttcctgctga catttccag 1140
atgcaagcaa caacccgata ccctggtgcc tattacattt tccagatcaa atctggcaac 1200
gagggtcgag agttctatat gccggcaaaca gggcctatca gtgccaccct ggtgatgaca 1260
cgccccatca aagggcctcg ggacatccag ctggacttgg agatgatcac tgtcaacact 1320
gtcatcaact tcagaggcag ctccgtgatc cgactgcgga tatatgtgtc gcagtatccg 1380
ttc 1383

<210> 7
<211> 2429
<212> DNA
<213> Mus musculus

<220>
<221> misc_feature
<223> Clone mouse A55b derived from Day 13 mouse embryonic heart

<220>
<221> misc_feature
<223> "n" can be a, c, g or t

<220>
<221> sig_peptide
<222> (232)..(339)

<220>
<221> mat_peptide
<222> (340)..()

<220>
<221> CDS
<222> (232)..(1614)

<400> 7
cagcatctcg agagaggcag cagacaacct ctctaggtca tttcttttc tttttggaaa 60
ggcgagcaac gttgtgcgca gtttataaaa tatcacacta catgtttttt aaatttggga 120
gactgctgac tacggcacca gcaattgctt tgctgcgacg gctgtgagac aagcagaagt 180
ctccgaacac ttctgtctgc gtttgctcta tgtgtgtgat ttacagaggg a atg gga 237
Met Gly
-35

cct aga agt ttc gag cca atg cac agt gga ctc tgc aga cag aga cgc 285
Pro Arg Ser Phe Glu Pro Met His Ser Gly Leu Cys Arg Gln Arg Arg

-30	-25	-20	
atg ata ctc act gtt acc atc ttg gca ctc tgg ctt cca cat cct ggg Met Ile Leu Thr Val Thr Ile Leu Ala Leu Trp Leu Pro His Pro Gly			333
-15	-10	-5	
aat gca cag cag cag tgc aca aac ggc ttt gac ctg gac cgc cag tca Asn Ala Gln Gln Gln Cys Thr Asn Gly Phe Asp Leu Asp Arg Gln Ser			381
-1 1	5	10	
gga cag tgt cta gat att gat gaa tgc cgg acc atc cct gag gct tgt Gly Gln Cys Leu Asp Ile Asp Glu Cys Arg Thr Ile Pro Glu Ala Cys			429
15	20	25	30
cgt ggg gac atg atg tgt gtc aac cag aat ggc ggg tat ttg tgc atc Arg Gly Asp Met Met Cys Val Asn Gln Asn Gly Gly Tyr Leu Cys Ile			477
35	40	45	
cct cga acc aac cca gtg tat cga ggg cct tac tca aat ccc tac tct Pro Arg Thr Asn Pro Val Tyr Arg Gly Pro Tyr Ser Asn Pro Tyr Ser			525
50	55	60	
aca tcc tac tca ggc cca tac cca gca gcg gcc cca cca gta cca gct Thr Ser Tyr Ser Gly Pro Tyr Pro Ala Ala Ala Pro Pro Val Pro Ala			573
65	70	75	
tcc aac tac ccc acg att tca agg cct ctt gtc tgc cgc ttt ggg tat Ser Asn Tyr Pro Thr Ile Ser Arg Pro Leu Val Cys Arg Phe Gly Tyr			621
80	85	90	
cag atg gat gaa ggc aac cag tgt gtg gat gtg gac gag tgt gca aca Gln Met Asp Glu Gly Asn Gln Cys Val Asp Val Asp Glu Cys Ala Thr			669
95	100	105	110
gac tca cac cag tgc aac cct acc cag atc tgt atc aac act gaa gga Asp Ser His Gln Cys Asn Pro Thr Gln Ile Cys Ile Asn Thr Glu Gly			717
115	120	125	
ggt tac acc tgc tcc tgc acc gat ggg tac tgg ctt ctg gaa ggg cag Gly Tyr Thr Cys Ser Cys Thr Asp Gly Tyr Trp Leu Leu Glu Gly Gln			765
130	135	140	
tgc cta gat att gat gaa tgt cgc tat ggt tac tgc cag cag ctc tgt Cys Leu Asp Ile Asp Glu Cys Arg Tyr Gly Tyr Cys Gln Gln Leu Cys			813
145	150	155	
gca aat gtt cca gga tcc tat tcc tgt aca tgc aac cct ggt ttc acc Ala Asn Val Pro Gly Ser Tyr Ser Cys Thr Cys Asn Pro Gly Phe Thr			861
160	165	170	
ctc aac gac gat gga agg tct tgc caa gat gtg aac gag tgc gaa act Leu Asn Asp Asp Gly Arg Ser Cys Gln Asp Val Asn Glu Cys Glu Thr			909
175	180	185	190
gag aat ccc tgt gtt cag acc tgt gtc aac acc tat ggc tct ttc atc			957

Glu Asn Pro Cys Val Gln Thr Cys Val Asn Thr Tyr Gly Ser Phe Ile			
195	200	205	
tgc cgc tgt gac cca gga tat gaa ctt gag gaa gat ggc att cac tgc			1005
Cys Arg Cys Asp Pro Gly Tyr Glu Leu Glu Asp Gly Ile His Cys			
210	215	220	
agt gat atg gac gag tgc agc ttc tcc gag ttc ctc tgt caa cac gag			1053
Ser Asp Met Asp Glu Cys Ser Phe Ser Glu Phe Leu Cys Gln His Glu			
225	230	235	
tgt gtg aac cag ccg ggc tca tac ttc tgc tcg tgc cct cca ggc tac			1101
Cys Val Asn Gln Pro Gly Ser Tyr Phe Cys Ser Cys Pro Pro Gly Tyr			
240	245	250	
gtc ctg ttg gat gat aac cga agc tgc cag gat atc aat gaa tgt gag			1149
Val Leu Leu Asp Asp Asn Arg Ser Cys Gln Asp Ile Asn Glu Cys Glu			
255	260	265	270
cac cga aac cac acg tgt acc tca ctg cag act tgc tac aat cta caa			1197
His Arg Asn His Thr Cys Thr Ser Leu Gln Thr Cys Tyr Asn Leu Gln			
275	280	285	
ggg ggc ttc aaa tgt att gat ccc atc agc tgt gag gag cct tat ctg			1245
Gly Gly Phe Lys Cys Ile Asp Pro Ile Ser Cys Glu Glu Pro Tyr Leu			
290	295	300	
ctg att ggt gaa aac cgc tgt atg tgt cct gct gag cac acc agc tgc			1293
Leu Ile Gly Glu Asn Arg Cys Met Cys Pro Ala Glu His Thr Ser Cys			
305	310	315	
aga gac cag cca ttc acc atc ctg tat cgg gac atg gat gtg gtg tca			1341
Arg Asp Gln Pro Phe Thr Ile Leu Tyr Arg Asp Met Asp Val Val Ser			
320	325	330	
gga cgc tcc gtt cct gct gac atc ttc cag atg caa gca aca acc cga			1389
Gly Arg Ser Val Pro Ala Asp Ile Phe Gln Met Gln Ala Thr Thr Arg			
335	340	345	350
tac cct ggt gcc tat tac att ttc cag atc aaa tct ggc aac gag ggt			1437
Tyr Pro Gly Ala Tyr Tyr Ile Phe Gln Ile Lys Ser Gly Asn Glu Gly			
355	360	365	
cga gag ttc tat atg cgg caa aca ggg cct atc agt gcc acc ctg gtg			1485
Arg Glu Phe Tyr Met Arg Gln Thr Gly Pro Ile Ser Ala Thr Leu Val			
370	375	380	
atg aca cgc ccc atc aaa ggg cct cgg gac atc cag ctg gac ttg gag			1533
Met Thr Arg Pro Ile Lys Gly Pro Arg Asp Ile Gln Leu Asp Leu Glu			
385	390	395	
atg atc act gtc aac act gtc atc aac ttc aga ggc agc tcc gtg atc			1581
Met Ile Thr Val Asn Thr Val Ile Asn Phe Arg Gly Ser Ser Val Ile			
400	405	410	

cga ctg cgg ata tat gtg tcg cag tat ccg ttc tgagcctctg gctaaggcct	1634
Arg Leu Arg Ile Tyr Val Ser Gln Tyr Pro Phe	
415	420
425	
ctgacactgc ct当地caccag caccgaggga cgggaggaga aaggaaacca gcaagaatga	1694
gagcgagaca gacattgcac ct当地ctgct gaatatctcc tggggcattc agcctagcat	1754
cttgaccat atctgtacta ttgcagatgg tcactctgaa ggacaccctg ccctcagttc	1814
ctatgatgca gttatccaaa agtgttcatc tt当地ccctg atatgaggtt gccagtgact	1874
cttcaaagcc tt当地atttat tt当地atcggtt ttataaaaaa gaaaatagat tagatttgct	1934
ggggtatgag tc当地gaagg tt当地aaagac tgagtggtt gctctcacct ct当地ctcc	1994
tt当地ccatc tcttgctgca tt当地gtctt gcaaaagtcc tcatggcctc gt当地aaatg	2054
ctggaaatag ct当地tttgct tcttgcatgt tctgagaagg ctatggaaac acaccacagc	2114
aggatcgaag gttttatag agtctatttt aaaatcacat ct当地ttt cagcataaaa	2174
gaaattttag tt当地ctttaa aatttgtatg agtgttaac ct当地tttat tc当地tttag	2234
gcttcttaaa gt当地tagaat tc当地ccaaa ggcctcagat acatgttatg tt当地gtctt	2294
ccaaacctcat ct当地ctgc atcttagccc agt当地ttacg aagaccctt aatcatgctt	2354
tnttaagagt tt当地acccaa ctgcgttggg agacagaggt atccagactg attaaataat	2414
tgaagaaaaa aaaaaa	2429

<210> 8
 <211> 461
 <212> PRT
 <213> Mus musculus

<220>
 <221> misc_feature
 <223> Clone mouse A55b derived from Day 13 mouse embryonic heart

<400> 8

Met Gly Pro Arg Ser Phe Glu Pro Met His Ser Gly Leu Cys Arg Gln
 -35 -30 -25

Arg Arg Met Ile Leu Thr Val Thr Ile Leu Ala Leu Trp Leu Pro His
 -20 -15 -10 -5

Pro Gly Asn Ala Gln Gln Cys Thr Asn Gly Phe Asp Leu Asp Arg
 -1 1 5 10

Gln Ser Gly Gln Cys Leu Asp Ile Asp Glu Cys Arg Thr Ile Pro Glu
15 20 25

Ala Cys Arg Gly Asp Met Met Cys Val Asn Gln Asn Gly Gly Tyr Leu
30 35 40

Cys Ile Pro Arg Thr Asn Pro Val Tyr Arg Gly Pro Tyr Ser Asn Pro
45 50 55 60

Tyr Ser Thr Ser Tyr Ser Gly Pro Tyr Pro Ala Ala Ala Pro Pro Val
65 70 75

Pro Ala Ser Asn Tyr Pro Thr Ile Ser Arg Pro Leu Val Cys Arg Phe
80 85 90

Gly Tyr Gln Met Asp Glu Gly Asn Gln Cys Val Asp Val Asp Glu Cys
95 100 105

Ala Thr Asp Ser His Gln Cys Asn Pro Thr Gln Ile Cys Ile Asn Thr
110 115 120

Glu Gly Gly Tyr Thr Cys Ser Cys Thr Asp Gly Tyr Trp Leu Leu Glu
125 130 135 140

Gly Gln Cys Leu Asp Ile Asp Glu Cys Arg Tyr Gly Tyr Cys Gln Gln
145 150 155

Leu Cys Ala Asn Val Pro Gly Ser Tyr Ser Cys Thr Cys Asn Pro Gly
160 165 170

Phe Thr Leu Asn Asp Asp Gly Arg Ser Cys Gln Asp Val Asn Glu Cys
175 180 185

Glu Thr Glu Asn Pro Cys Val Gln Thr Cys Val Asn Thr Tyr Gly Ser
190 195 200

Phe Ile Cys Arg Cys Asp Pro Gly Tyr Glu Leu Glu Glu Asp Gly Ile
205 210 215 220

His Cys Ser Asp Met Asp Glu Cys Ser Phe Ser Glu Phe Leu Cys Gln
225 230 235

His Glu Cys Val Asn Gln Pro Gly Ser Tyr Phe Cys Ser Cys Pro Pro
240 245 250

Gly Tyr Val Leu Leu Asp Asp Asn Arg Ser Cys Gln Asp Ile Asn Glu
255 260 265

Cys Glu His Arg Asn His Thr Cys Thr Ser Leu Gln Thr Cys Tyr Asn
270 275 280

Leu Gln Gly Phe Lys Cys Ile Asp Pro Ile Ser Cys Glu Glu Pro
285 290 295 300

Tyr Leu Leu Ile Gly Glu Asn Arg Cys Met Cys Pro Ala Glu His Thr
305 310 315

Ser Cys Arg Asp Gln Pro Phe Thr Ile Leu Tyr Arg Asp Met Asp Val
320 325 330

Val Ser Gly Arg Ser Val Pro Ala Asp Ile Phe Gln Met Gln Ala Thr
335 340 345

Thr Arg Tyr Pro Gly Ala Tyr Tyr Ile Phe Gln Ile Lys Ser Gly Asn
350 355 360

Glu Gly Arg Glu Phe Tyr Met Arg Gln Thr Gly Pro Ile Ser Ala Thr
365 370 375 380

Leu Val Met Thr Arg Pro Ile Lys Gly Pro Arg Asp Ile Gln Leu Asp
385 390 395

Leu Glu Met Ile Thr Val Asn Thr Val Ile Asn Phe Arg Gly Ser Ser
400 405 410

Val Ile Arg Leu Arg Ile Tyr Val Ser Gln Tyr Pro Phe
415 420 425

<210> 9
<211> 423
<212> PRT
<213> Mus musculus

<400> 9

Gln Cys Thr Asn Gly Phe Asp Leu Asp Arg Gln Ser Gly Gln Cys Leu
1 5 10 15

Asp Ile Asp Glu Cys Arg Thr Ile Pro Glu Ala Cys Arg Gly Asp Met
20 25 30

Met Cys Val Asn Gln Asn Gly Gly Tyr Leu Cys Ile Pro Arg Thr Asn
35 40 45

Pro Val Tyr Arg Gly Pro Tyr Ser Asn Pro Tyr Ser Thr Ser Tyr Ser
50 55 60

Gly Pro Tyr Pro Ala Ala Ala Pro Pro Val Pro Ala Ser Asn Tyr Pro
65 70 75 80

Thr Ile Ser Arg Pro Leu Val Cys Arg Phe Gly Tyr Gln Met Asp Glu
85 90 95

Gly Asn Gln Cys Val Asp Val Asp Glu Cys Ala Thr Asp Ser His Gln
100 105 110

Cys Asn Pro Thr Gln Ile Cys Ile Asn Thr Glu Gly Gly Tyr Thr Cys
115 120 125

Ser Cys Thr Asp Gly Tyr Trp Leu Leu Glu Gly Gln Cys Leu Asp Ile
130 135 140

Asp Glu Cys Arg Tyr Gly Tyr Cys Gln Gln Leu Cys Ala Asn Val Pro
145 150 155 160

Gly Ser Tyr Ser Cys Thr Cys Asn Pro Gly Phe Thr Leu Asn Asp Asp
165 170 175

Gly Arg Ser Cys Gln Asp Val Asn Glu Cys Glu Thr Glu Asn Pro Cys
180 185 190

Val Gln Thr Cys Val Asn Thr Tyr Gly Ser Phe Ile Cys Arg Cys Asp
195 200 205

Pro Gly Tyr Glu Leu Glu Asp Gly Ile His Cys Ser Asp Met Asp
210 215 220

Glu Cys Ser Phe Ser Glu Phe Leu Cys Gln His Glu Cys Val Asn Gln
225 230 235 240

Pro Gly Ser Tyr Phe Cys Ser Cys Pro Pro Gly Tyr Val Leu Leu Asp
245 250 255

Asp Asn Arg Ser Cys Gln Asp Ile Asn Glu Cys Glu His Arg Asn His
260 265 270

Thr Cys Thr Ser Leu Gln Thr Cys Tyr Asn Leu Gln Gly Gly Phe Lys
275 280 285

Cys Ile Asp Pro Ile Ser Cys Glu Glu Pro Tyr Leu Leu Ile Gly Glu
 290 295 300
 Asn Arg Cys Met Cys Pro Ala Glu His Thr Ser Cys Arg Asp Gln Pro
 305 310 315 320
 Phe Thr Ile Leu Tyr Arg Asp Met Asp Val Val Ser Gly Arg Ser Val
 325 330 335
 Pro Ala Asp Ile Phe Gln Met Gln Ala Thr Thr Arg Tyr Pro Gly Ala
 340 345 350
 Tyr Tyr Ile Phe Gln Ile Lys Ser Gly Asn Glu Gly Arg Glu Phe Tyr
 355 360 365
 Met Arg Gln Thr Gly Pro Ile Ser Ala Thr Leu Val Met Thr Arg Pro
 370 375 380
 Ile Lys Gly Pro Arg Asp Ile Gln Leu Asp Leu Glu Met Ile Thr Val
 385 390 395 400
 Asn Thr Val Ile Asn Phe Arg Gly Ser Ser Val Ile Arg Leu Arg Ile
 405 410 415
 Tyr Val Ser Gln Tyr Pro Phe
 420

<210> 10
 <211> 1269
 <212> DNA
 <213> Mus musculus

<400> 10
 cagtgcacaa acggcttga cctggaccgc cagtcaggac agtgtctaga tattgatgaa 60
 tgccggacca tccctgaggc ttgtcgtggg gacatgatgt gtgtcaacca gaatggccgg 120
 tatttgcac tccctcgaac caacccagtg tatcgaggc cttactcaaa tccctactct 180
 acatcctact caggcccata cccagcagcg gccccaccag taccagctc caactacccc 240
 acgatttcaa ggcctttgt ctgcccgtt gggtatcaga tggatgaagg caaccagtgt 300
 gtggatgtgg acgagtggtgc aacagactca caccagtgc accctaccca gatctgtatc 360
 aacactgaag gaggttacac ctgctcctgc accgatgggt actggcttct ggaagggcag 420
 tgccttagata ttgatgaatg tcgctatggt tactgccagc agctctgtgc aaatgttcca 480
 ggatccttatt cctgtacatg caaccctgggt ttcaccctca acgacgatgg aaggtcttgc 540
 caagatgtga acgagtgcgaa aactgagaat ccctgtgttc agacctgtgt caacacctat 600
 ggctctttca tctgcccgtg tgacccagga tatgaacttg aggaagatgg cattcactgc 660

agtgtatgg acgagtgcag cttctccgag ttccctgtc aacacgagtg tgtgaaccag	720
ccgggctcat acttctgctc gtgccctcca ggctacgtcc tgttggatga taaccgaagc	780
tgccaggata tcaatgaatg tgagcaccga aaccacacgt gtacctcact gcagacttgc	840
tacaatctac aagggggctt caaatgtatt gatcccatca gctgtgagga gccttatctg	900
ctgattggtg aaaaccgctg tatgtgtcct gctgagcaca ccagctgcag agaccagcca	960
ttcaccatcc tgtatcgga catggatgtg gtgtcaggac gctccgttcc tgctgacatc	1020
ttccagatgc aagcaacaac ccgataaccct ggtgcctatt acattttcca gatcaaatct	1080
ggcaacgagg gtcgagagtt cstatatgcgg caaacagggc ctatcagtgc caccctggtg	1140
atgacacgcc ccatcaaagg gcctcgggac atccagctgg acttggagat gatcaactgtc	1200
aacactgtca tcaacttcag aggcagctcc gtgatccgac tgccgatata tgtgtcgcag	1260
tatccqttc	1269

```
<210> 11
<211> 35
<212> DNA
<213> Artificial Sequence
```

<220>
<223> Description of Artificial Sequence: Primer

```
<220>
<221> misc_feature
<223> "n" may be a, c, g or t
```

<400> 11
cgattgaatt ctagacctgc ctcgagnnnn nnnnn 35

```
<210> 12
<211> 27
<212> DNA
<213> Artificial Sequence
```

<220>
<223> Description of Artificial Sequence: A55 R1 Primer

<400> 12 cgtttgtgca ctgctgctgt gcattcc 27